DOCUMENT RESUME

ED 479 543 IR 022 147

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TITLE	Learning Networks: A Proven Approach for Delivering Massively Scalable Blended Learning Solutions.
PUB DATE	2002-10-00
NOTE	9p.; In: E-Learn 2002 World Conference on E-Learning in Corporate, Government, Healthcare, & Higher Education. Proceedings (7th, Montreal, Quebec, Canada, October 15-19, 2002); see IR 022 093.
AVAILABLE FROM	Association for the Advancement of Computing in Education (AACE), P.O. Box 3728, Norfolk, VA 23514. Tel: 757-623-7588; e-mail: info@aace.org; Web site: http://www.aace.org/DL/.
PUB TYPE	Reports - Descriptive (141) -- Speeches/Meeting Papers (150)
EDRS PRICE	EDRS Price MF01 Plus Postage. PC Not Available from EDRS
DESCRIPTORS	*Computer Assisted Instruction; *Computer Networks; Distance Education; *Information Networks; Nontraditional Education; Postsecondary Education; *Teaching Methods
IDENTIFIERS	Asynchronous Learning Networks; Distributed Computing; Distributive Programs; Technology Implementation

ABSTRACT

Learning networks are a proven way to deliver massively scalable blended learning solutions that have been successfully implemented in a variety of commercial situations. For learning challenges that involve educating hundreds of thousands of distributed learners across thousands of organizations, learning networks can enable the delivery of up-to-the-minute learning content in a blended learning environment for a fraction of the cost of traditional methods. While the challenges of large-scale learning vary depending on the context and subject matter, a variety of common best practices from various implementations of learning networks can be applied to many situations. Any organization seeking a cost effective, scalable, geographically dispersed blended learning solution should consider the learning network approach. (Author)

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Learning Networks: A Proven Approach for Delivering Massively Scalable Blended Learning Solutions

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Abstract: Learning networks are a proven way to deliver massively scalable blended learning solutions that have been successfully implemented in a variety of commercial situations. For learning challenges that involve educating hundreds of thousands of distributed learners across thousands of organizations, learning networks can enable the delivery of up-to-the-minute learning content in a blended learning environment for a fraction of the cost of traditional methods. While the challenges of large-scale learning vary depending on the context and subject matter, a variety of common best practices from various implementations of learning networks can be applied to many situations. Any organization seeking a cost effective, scalable, geographically dispersed blended learning solution should consider the learning network approach.

What is a Learning Network?

Learning networks are a cost effective way of delivering learning solutions to large, distributed target audiences. They are highly scalable with no effective upper size limit. Typical examples have thousands of training centers structured in a network of collaborating organizations. These networks typically support thousands of instructors and hundreds of thousands of students. Learning networks often deliver many related courses and some have produced millions of certified alumni. The cost of education in a learning network is usually shared across the entire network of participating organizations and this encourages collaboration between institutions. This type of network has been tried and tested. Many highly effective examples serving various industries and fields of interest exist. They are made significantly more effective when combined with a blended learning approach that utilizes the Internet to deliver instructional material, assessments, communication, and community support tools. Learning networks are not a universal panacea for scaling learning solutions. Some subject matters do not require a blended approach or are otherwise not suitable for learning networks

Scalability and Technology

Many existing learning networks have undergone remarkably rapid growth and now successfully support large numbers of students often distributed around the world. In most cases they have achieved this growth without the significant use of digital technologies. A few networks have recently been built based on digital technologies and these examples show significant improvements over traditional methods. When combined with digital technologies, learning networks offer a compelling approach to delivering massively scalable blended learning solutions.

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Scaling blended learning solutions requires all aspects of the solution to be scaled, not just the technology used to deliver content. Many people performing different roles are fundamental to the success of such solutions. Students, teachers, instructors, mentors, and administrators must all participate in the solution. In addition, the solution must be scalable with respect to content development and delivery, instructional practices, and community. These aspects of scaling learning solutions are best solved by an organizational approach supported by technology. They cannot be solved by technology alone.

Typical Features of a Learning Network

Centers of Instruction and a Clearly Defined Theme

Instruction delivered within learning networks usually falls within a narrowly defined theme. This theme usually includes both cognitive and manual skills. The use of specialist equipment is common and the initial learning curve is often extremely steep, requiring students to apply new cognitive and manual skills while using unfamiliar equipment. All these features combine to necessitate the existence of instruction centers that house equipment and provide a place where students can go for initial instruction under close guidance. Mastering the content and skills taught within learning networks often requires a significant amount of study and practice. As a result, the instruction centers often become a focal point for community by bringing both novice and experienced learners together in a collegial atmosphere.

Highly Structured Progression of Courses Leading to Formal Assessment and Certification

Learning networks typically provide a clearly defined learning path for students. A progression of courses from beginner through intermediate and advanced lays out a path that all students must follow. Students can only progress to the next stage following completion of a course and the successful completion of the associated assessment. Once the student reaches the intermediate level, a series of optional, specialized, supplemental courses is available for enthusiastic or precocious learners. Assessment and certification are an integral part of learning networks. Certifications gained within learning networks often have meaning and value outside the network. They can help with employment and sometimes reduce the cost of products and services. In some cases the assessment leading to certification is carried out by a third-party organization, such as a government agency.

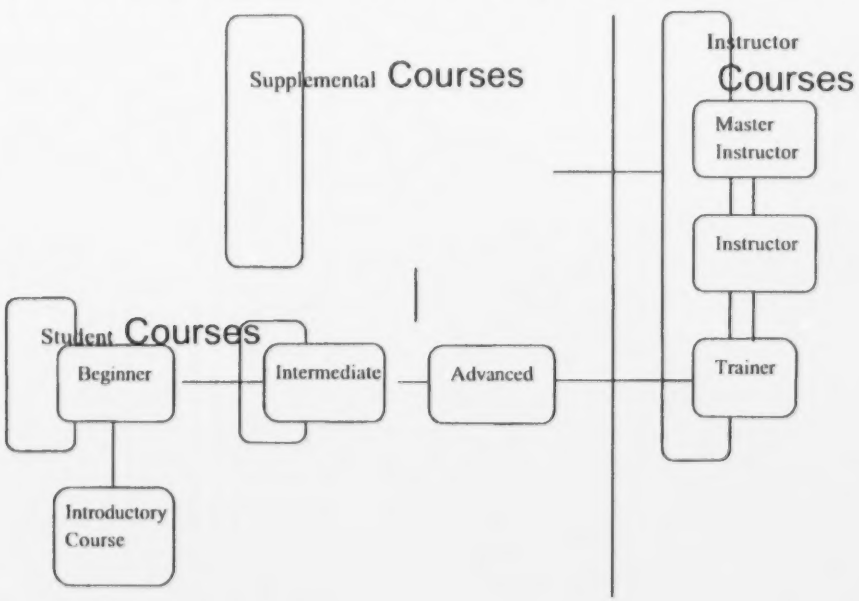

Figure 1: Typical Structure of Courses Offered in a Learning Network

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Integrated Instructor Training

Most learning networks provide at least two course programs, one for students and a second—available only to those who have completed the advanced courses—for instructors. It is common for learning networks to require instructors to have completed the network's own instructor training course prior to teaching the program's material. Similar to the courses available to students, instructor courses are arranged in a clearly defined learning path. Instructors can, if they wish, progress to be advanced and even master instructors. Instructors commonly earn their living from instructing within the learning network whereas students, even advanced students, do not. Instructor training courses often include administration training for running a participating organization.

A Central Management Agency

A central agency that sets direction and defines curriculum, assessment, and quality standards and ensures overall program consistency is a typical component of learning networks. Agencies of this type are often created initially to serve the needs of the instructor community—only later do they become the central hub of a learning network. In cases where the agency is established by some other organization that seeks to "own" the network, maximum effectiveness can only be realized if the central agency leaves enough "on the table" to keep the instructors involved and motivated. This may be accomplished through financial incentives or the ability to control or customize the program. The central management agency is never run for a significant (if any) profit. Instead, the network is run for the benefit of the member organizations, instructors, and students. The financial value generated by successful learning networks is spread throughout the entire network, not concentrated in the central managing agency.

A Network of Ranked Collaborating Organizations

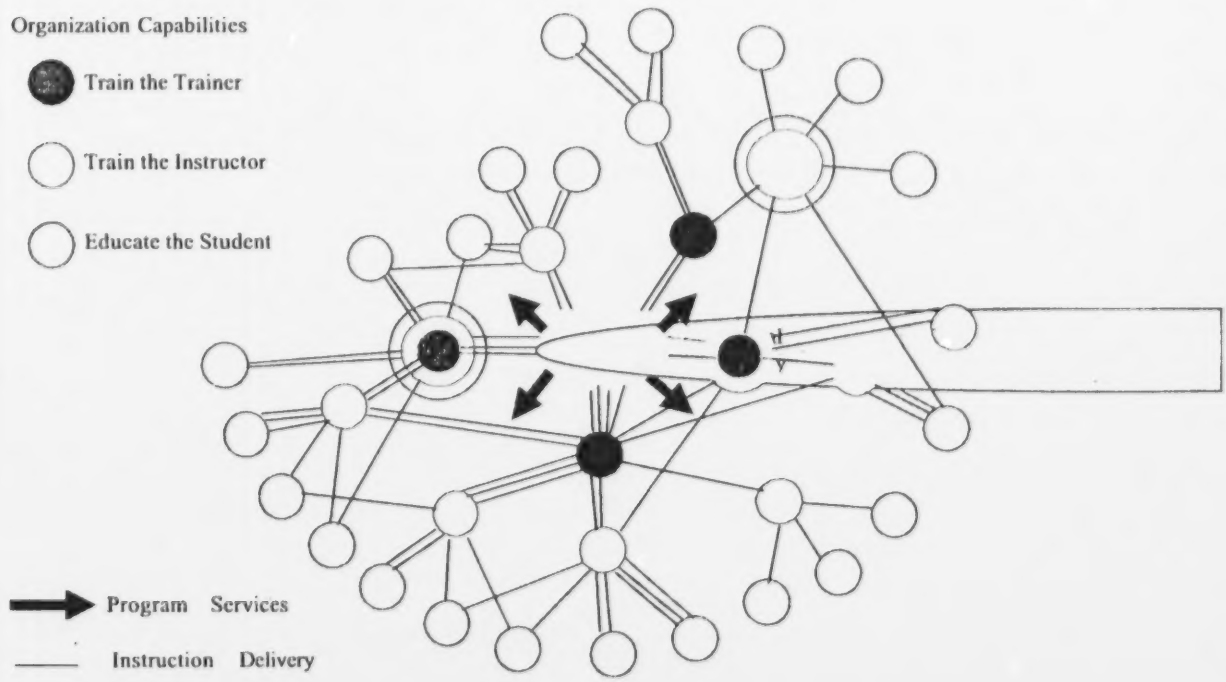

Figure 2: A Schematic Representation of a Learning Network

The organizations that comprise a learning network are typically ranked based on their capabilities within the program (for example, one- to five-star academies). These rankings are determined by the proficiency of the instructors an organization employs as well as the facilities and equipment it possesses. The rank of an organization determines the

type of courses it is allowed to offer within the program. Usually, this rank determines the highest level of student the organization is allowed to certify. For example, a one-star academy can certify students in the basic, intermediate, and advanced courses; a two-star academy can certify trainers; and a three-star academy can certify instructors that train trainers. To advance within the program, an organization must increase the proficiency of the instructors it employs. This can be done by sending instructors to other, higher ranked academies for training. This train-the-trainer model leads to the development of a hierarchy within the network. Higher ranked organizations are required to recruit and grow less capable organizations. These features combine to drive the growth of learning networks and self regulate the network—whereas poor-quality organizations tend not to grow

Quality Assurance Program

A formal process for removing low-quality instructors and organizations from the program is typical of many learning networks. This process is usually provided by the central management agency and takes the form of a quality program for collecting and investigating complaints.

The Anatomy of a Learning Network

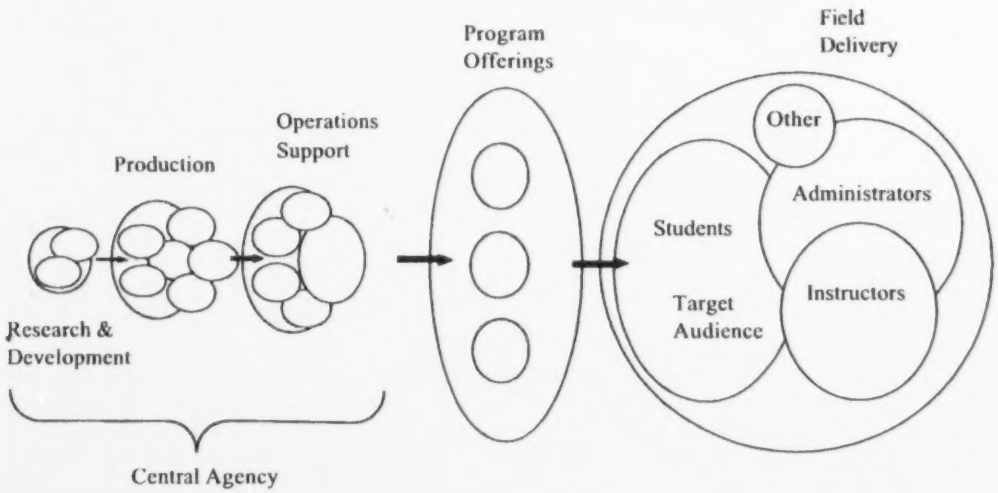

Figure 3: Functional Components of a Learning Network

The Production Line Analogy

Learning networks are analogous to typical product manufacturing production lines. Many of the rigorous business processes developed for product manufacturing can be beneficially applied to learning networks. The central management agency of a learning network is responsible for "manufacturing" and "bringing to market" programs of instruction. These programs usually contain multiple courses and are delivered into the field by the "distribution network" of organizations that provide instruction to students. Many of the disciplines of product manufacturing can be applied. Launching new programs is analogous to launching new products, and program quality can be maintained by adopting many of the total quality management processes common in manufacturing. Ultimately, however, learning networks do not manufacture products. The analogy, while useful, must not be taken too far. The goal of providing effective learning experiences must not be sacrificed in pursuit of greater efficiency. Striking the correct balance between the two is one of the primary responsibilities of the central management agency.

Research and Development

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Typically a small "core team" focused mostly on learning-model evaluation and design leads the research and development (R&D) efforts. This team works closely with outside groups to identify and evaluate emerging trends and best practices that may be applicable to further enhancing the network. Research subjects include adoption of different teaching and assessment methods and their application to procedural, collaborative, and problem-based learning. This group is responsible for prototyping new technologies, such as simulations and virtual reality, case-based learning, and peer-to-peer collaboration. Using data provided by the operations-support and field-delivery teams, these prototypes can be rapidly evaluated, improved, and rolled out to the entire learning network.

Production

The production group is responsible for developing and implementing learning programs with direction from the R&D, operations support, and field delivery teams. Specific areas of focus include both designing and planning the instructional program. This includes the design and development of the curriculum, instructional material, and associated assessments. Once this is completed, translation and localization can be carried out—if required. Finally, the production group is responsible for quality assurance of the instructional material.

Operations Support

The largest of the central management agency groups, operations support is directly responsible for the delivery and support of all programs and services to the dispersed field delivery network. The operations support group provides hands-on support to the many field delivery organizations around all aspects of running their academy. Operations support is broken down into five main areas:

1. Program management: This function ensures the smooth transition and roll out of new programs and delivery systems to the field delivery network. This includes supporting recruitment of instructors and academies, as well as promoting and demoting academies.

2. Delivery support: This function directly supports instructors in the field. Through a central helpdesk or website and regular site visits, instructors are supported and taught about new features, techniques, and opportunities.

3. Field quality assurance: This function monitors academy performance and student results. It also investigates and resolves complaints.

4. Marketing and communications: This group provides academies with marketing materials to help attract students. It also supports academies of higher rank in recruiting other academies into the program.

5. Technical support: This group manages the network infrastructure and maintains levels of service.

Field Delivery

Field delivery is, by far, the largest part of any learning network. This function contains many varied sub-groups. Included here are the organizations or academies responsible for managing the delivery of instruction as well as the employees that work for these institutions, typically instructors and administrators. The students themselves are included in this group and provision is often made for alumni so that community and support can be provided beyond the immediate learning period. Field delivery is the last stage in the production line analogy. Equivalent to a manufacturer's distribution channel, field delivery involves the largest number of people and is the most difficult part of the learning network to change. As delivery organizations in the field mature, they often assume some of the operational and support roles (instructor training, delivery-system support and recruitment, etc.) for less mature organizations. This feeds the growth of the overall program.

Supporting Technology

Many effective large-scale learning networks have evolved without the extensive use of technology to support program delivery. However, the Internet has made possible lower-cost platforms to further enhance efficiencies in most areas: content authoring and management systems are available to support production of new programs; content distribution systems enable content to be delivered directly into the classroom; and assessment engines that enable the measurement of proficiency and learning management systems support the administration of academies and the tracking of student grades and certification. While all the components of a standard integrated learning management system are required for each academy, there is a need for network-level tools and services to administer the network of organizations and track instructors and students as they move between institutions. These tools are typically custom built, as few vendors of integrated learning management systems provide this functionality.

Applicability of Learning Networks

A learning network is most applicable when three key features are present. The absence of one of these features does not mean a learning network cannot work, but it does mean it may be less appropriate.

1. A blended-learning model is required because pure distance learning will not support the required access to people or equipment. In such cases, teamwork or social interaction may be an integral part of the instruction, or access to location-dependent specialist equipment may be mandatory.

2. A large number of organizations are able and willing to join the network and deliver the instructional program. These organizations can take many forms: a network of dealers, resellers, or agents; schools and adult education centers; or large organizations with many semi-autonomous sub-groups, such as government agencies, armed forces, and healthcare providers.

3. The target audience values certification and is willing to pay a reasonable fee and invest a significant amount of time to qualify. For example, certification may significantly improve employment or promotion prospects, or enable leisure activities.

Benefits of Learning Networks

Learning networks have many benefits. The network structure itself allows the costs of instruction to be spread across the entire network. The network often functions like a market; this prevents any one organization from making inordinate profits and also serves to keep costs at reasonable levels. The network structure also enables rapid reaction to market dynamics. New curriculum and assessment can be prototyped, refined, and rolled out to the entire network in very short time frames. These features support the rapid growth of learning networks.

The academy-based delivery model enables high-quality blended learning and—as a side effect—develops significant customer loyalty. Students and instructors meet at centers where they form communities that are surprisingly enduring.

Learning networks are massively scalable. They do not require a single, expensive, monolithic organization to deliver on a global scale. Indeed, global delivery is possible with just a few hundred people running the central management agency. By leveraging technology to streamline administration and delivery, the central management agency can stay in direct touch with many parts of the field organization.

Example Learning Networks

Many examples of learning networks exist, supporting different industries, professions, and areas of interest:

- Operation of Complex Equipment
  - National Association of Flight Instructors (NAFI)
  - Driving Instructors Association (DIA)
- Vocational Training
  - Cisco Networking Academy

- Automotive collision repair (I-CAR)
- Education
  - Science Learning Network
- Leisure Activities
  - Scuba diving (SSI)
  - Professional Association of Dive Instructors (PADI)
  - British Sub-Aqua Club (BSAC)
  - Professional Ski Instructors of America (PSIA)

Cisco Networking Academy

The Cisco Networking Academy program is a comprehensive e-learning program that provides students with multiple levels and kinds of certified Internet technology skills. Initially focused on network system skills (Cisco Certified Network Associate and Professional CCNA and CCNP), the program has rapidly expanded both the geographical coverage and the program curriculum. The program now includes courses sponsored by IT industry leaders (including Unix and Web Design) and is offered by a wide range of high schools, technical schools, colleges, universities, community based organizations, and military academies worldwide. The fully web-based program provides educational content, online testing, student performance tracking, and instructor training and support. The instructor-led classroom structure leverages this technology while providing high-touch support for students.

Business Results

- 9,000 Academies
- 130 Countries
- Nine Languages
- 15000 Instructors
- 250,000 students
- 30,000 + examinations per day
- Support for three million page views per day
- 50-percent annual growth
- A global delivery network, including an advanced, scalable LCMS and LMS tailored for learning network support

The Professional Association of Dive Instructors (PADI)

PADI is the world's largest recreational diving membership organization. Membership includes dive businesses, resort facilities, academic institutions, instructor trainers, dive educators, divers, snorkelers, and other water sports enthusiasts. PADI is focused on maintaining industry standards for dive training, safety, and customer service by supplying a range of educational materials, training aids, promotional pieces, certification, and recognition materials to support the delivery and marketing of PADI programs.

PADI certifies multiple levels of instructors. Instructors, master instructors, and course directors all exist within the program, which employs strict educational standards to maintain worldwide consistency and quality. The program has a full-time quality assurance department and all student training is conducted by certified instructors.

Business Results

- 526,904 new diver certifications (worldwide, 2000)
- Since 1967, over 10,151,841 diver certifications issued
- 106,893 total PADI individual professional members (2000)
- 4,726 total international resort and retailer association members (2000)
- Active in over 100 countries worldwide
- Curriculum is delivered to training organizations via traditional methods books, videos, CDROM, etc.

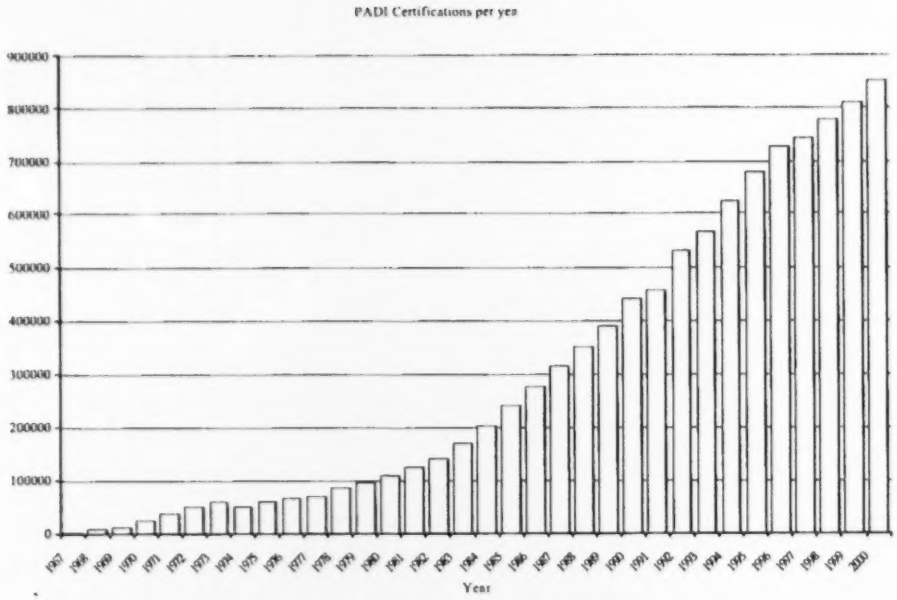

Figure 4: **PADI certifications per year since 1967**

Conclusion

Adoption and acceptance of e-learning is growing rapidly. However, there are classes of learning that are still best accomplished through the use of instructor-led training, leveraging physical classroom settings and resources. Learning networks offer a proven approach to building large-scale blended learning solutions. And emerging technologies can significantly increase the effectiveness of learning networks.

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